REMARKS

This is a full and timely response to the outstanding non-final Office Action mailed July 14, 2004. Reconsideration and allowance of the application and pending claims 1-28 are respectfully requested.

I. Allowed and Allowable Subject Matter

Applicants appreciate the Examiner's indication that claims 25-28 are allowed and that claims 10-12, 22-24 would be allowable if rewritten to include all of the limitations of the base claim and any intervening claims.

In that it is believed that every rejection has been overcome, it is respectfully submitted that each of the claims that remains in the case is presently in condition for allowance.

II. Specification Objection

The specification has been objected to for containing various informalities. Specifically, the Office Action states the following in section 1:

> The disclosure is objected to because of the following informalities: On page 7, lines 23-25 applicant uses the reference numeral 426 to represent both the I and Q quadrature signals. Appropriate correction is required.

In response to the objection, Applicants have amended the specification to correct this typographical error. The correction reflects the fact that reference numeral 426 corresponds to the I signal and reference numeral 424 corresponds to the Q signal. Although this and other amendments noted above effect various changes to the specification, it is respectfully

asserted that no new matter has been added. In view of these amendments, Applicants respectfully submit that the specification is not objectionable, and therefore respectfully requests that the objection be withdrawn.

III. Claim Rejections - 35 U.S.C. § 102(a)/103(a)-- Claims 1-8, 13-20

A. Statement of the Rejection

Claims 1-8, 13-20 have been rejected under 35 U.S.C. § 102(a) as allegedly anticipated by, or in the alternative, under 35 U.S.C. § 103(a) as allegedly being obvious over *Camp, Jr., et al.* ("*Camp*," U.S. Pat. No. 6,621,876). Applicants respectfully traverse this rejection.

B. Discussion of Rejection

It is axiomatic that "[a]nticipation requires the disclosure in a single prior art reference of each element of the claim under consideration." *W. L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1554, 220 U.S.P.Q. 303, 313 (Fed. Cir. 1983). Therefore, every claimed feature of the claimed invention must be represented in the applied reference to constitute a proper rejection under 35 U.S.C. § 102(a). In the present case, not every feature of the claimed invention is represented in the *Camp* reference.

Also, as has been acknowledged by the Court of Appeals for the Federal Circuit, the U.S. Patent and Trademark Office ("USPTO") has the burden under section 103 to establish a proper case of obviousness by showing some objective teaching in the prior art or generally available knowledge of one of ordinary skill in the art that would lead that individual to the claimed invention. See *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q.2d 1596,

1598 (Fed. Cir. 1988). Accordingly, to make a proper case for obviousness, there must be a prior art teaching or established knowledge that would suggest to a person having ordinary skill in the pertinent art to fill the voids apparent in the applied reference. It is respectfully asserted that no such case has been made in the outstanding Office Action.

Independent Claim 1

As provided in independent claim 1, Applicants claim (emphasis added):

> 1. A polyphase filter comprising
> a first phase splitting filter that produces a first output,
> a second phase splitting filter that produces a second output,
> a first variable resistance connected across the first output, and
> ***circuitry capable of detecting the phase of the outputs produced by the first and second outputs, and circuitry capable of adjusting the first variable resistance to produce a desired phase difference between the first output and the second output.***

Applicants respectfully submit that *Camp* does not disclose, teach, or suggest at least the emphasized claim features. The Office Action alleges the following:

> With regard to claim 1, Camp, Jr., et al. discloses...circuitry capable of detecting the phase of the outputs produced by the first and second outputs, and circuitry capable of adjusting the first variable resistance (col. 10, lines 1-11) to produce a desired phase difference between the first output and the second output (col. 5, lines 52-64).

Applicants respectfully disagree. Column 10, lines 1-11 of *Camp*, cited above, refer to Figures 9A and 9B. Fig. 9A does not show detection of phase at all, and Fig. 9B appears to show detection of phase for a single output through feedback, and not detection of the ***phase of the outputs produced by the first and second outputs***, as recited in claim 1. This is not surprising, as *Camp* is not concerned with, nor does it address, quadrature accuracy (*e.g.*, maintaining a defined, predictable phase difference between the I and Q signals).

Quadrature accuracy is made possible by detecting a phase difference between the I and Q signal outputs and, in one embodiment, adjusting a variable resistance to "produce a desired phase difference." Since *Camp* does not disclose, teach, or suggest the emphasized claim features, Applicants respectfully request that the rejection to claim 1 be withdrawn.

Because independent claim 1 is allowable over *Camp*, corresponding dependent claims 2-12 are allowable as a matter of law for at least the reason that dependent claims 2-12 contain all elements of their respective base claim. See, *e.g.*, *In re Fine*, 837 F.2d 1071 (Fed. Cir. 1988).

Independent Claim 13

As provided in independent claim 13, Applicants claim (emphasis added):

> 13. A polyphase filter, comprising
> a first phase splitting filter that produces a first output;
> a second phase splitting filter that produces a second output;
> a first variable resistance connected across the first output; and
> ***a detector that determines the phase of the first and second outputs, and adjusts the first variable resistance to produce a desired phase difference between the first output and the second output.***

Applicants respectfully submit that *Camp* does not disclose, teach, or suggest at least the emphasized claim features. As described above, the Office Action cites column 10, lines 1-11 of *Camp*, which refer to Figures 9A and 9B. Fig. 9A does not show detection of phase at all, and Fig. 9B appears to show detection of phase for a single output through feedback, and not a ***detector that determines the phase of the first and second outputs***, as recited in claim 1. *Camp* is not concerned with, nor does it address, quadrature accuracy (*e.g.*, maintaining a defined, predictable phase difference between the I and Q signals), and thus

does not contemplate the determination of phase differences between two I/Q signal outputs. Since *Camp* does not disclose, teach, or suggest the emphasized claim features, Applicants respectfully request that the rejection to claim 13 be withdrawn.

Because independent claim 13 is allowable over *Camp*, corresponding dependent claims 13-24 are allowable as a matter of law.

IV. Claim Rejections - 35 U.S.C. § 103(a)—Dependent Claims 9 and 21

A. Statement of the Rejection

Claims 9 and 21 have been rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over *Camp, Jr.* in view of *Vinn, et al.* ("*Vinn*," U.S. Pat. No. 6,441,682). Applicants respectfully traverse this rejection.

B. Discussion of the Rejection

As identified above in reference to independent claims 1 and 13, *Camp* does not disclose, teach, or suggest the claim features emphasized above (see Section III of this response). In that *Vinn* does not remedy this deficiency of the *Camp*, Applicants respectfully submit that claim 9, which depends from claim 1, and claim 21, which depends from claim 13, are allowable over the *Camp/Vinn* combination for at least the same reasons that claim 1 is allowable over *Camp*.

In addition, Applicants respectfully disagree with the assertions made in the Office Action with regard to obviousness. In particular, Applicants respectfully submit that the combination of references neither disclose all of the claimed features of claims 9 and 21 nor

would it be obvious to apply *Vinn* to modify *Camp* to make the claimed invention. The Office Action alleges the following:

> With regard to claim 9, as noted above, Camp, Jr., et al. discloses all limitations of claim 1 above. He does not however disclose wherein the circuitry capable of detecting the phase of the outputs includes a phase detector, an integrator and a differential amplifier.
>
> However, Vinn et al. teaches an active polyphase filter wherein the circuitry capable of detecting the phase of the outputs includes a phase detector, an integrator and a differential amplifier (col. 14, lines 10-34).
>
> One skilled in the art would have clearly recognized that a polyphase filter wherein the circuitry capable of detecting the phase of the outputs includes a phase detector, an integrator and a differential is a well-known technique introduced in many references. Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to apply the method as taught by Vinn et al. to modify the invention of Camp, Jr., et al. as a method of improving the implementation of a polyphase filter (col. 7, lines 22-35; col. 11, line 62-col. 12, line 12).

First, it is not clear from the *Vinn* reference where exactly the architecture corresponding to circuitry capable of detecting the phase of the outputs includes a phase detector, an integrator and a differential amplifier is taught or suggested. It does not appear that the cited sections above (presumably of *Vinn*) disclose the circuitry as claimed. Applicants respectfully request that the next Office Action point out where this circuitry is disclosed. Second, neither *Vinn* nor *Camp* (as noted above) are concerned with quadrature accuracy, particularly since it appears that quadrature accuracy is not a concern in cross coupling architectures with shared I/Q componentry (see col. 7, lines 4-10). This latter fact, coupled with the fact that the adjustment of resistance/capacitance described in *Vinn* (*e.g.*, shunt capacitors/reactances are disposed between the input and output terminals of the reactance output terminals) for purposes of adjustment of center frequencies (see col. 7, line 10-col. 8, line 55) are distinct circuit architectures from Applicants' claimed features,

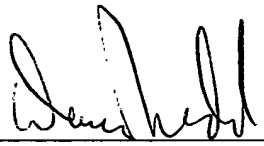
clearly distinguish the Applicants claimed features from the cited references, and thus support a finding of nonobviousness.

In summary, it is Applicants' position that a proper case for obviousness has not been made against Applicants' independent claim 1 and 13, or claims 2-12 and 14-24 which depend therefrom. Therefore, it is respectfully submitted that each of these claims, in addition to those indicated as allowed, is patentable over *Vinn* and *Camp* and that the rejection of these claims should be withdrawn.

CONCLUSION

Applicants respectfully submits that Applicants' pending claims are in condition for allowance. Favorable reconsideration and allowance of the present application and all pending claims are hereby courteously requested. If, in the opinion of the Examiner, a telephonic conference would expedite the examination of this matter, the Examiner is invited to call the undersigned attorney at (770) 933-9500.

Respectfully submitted,



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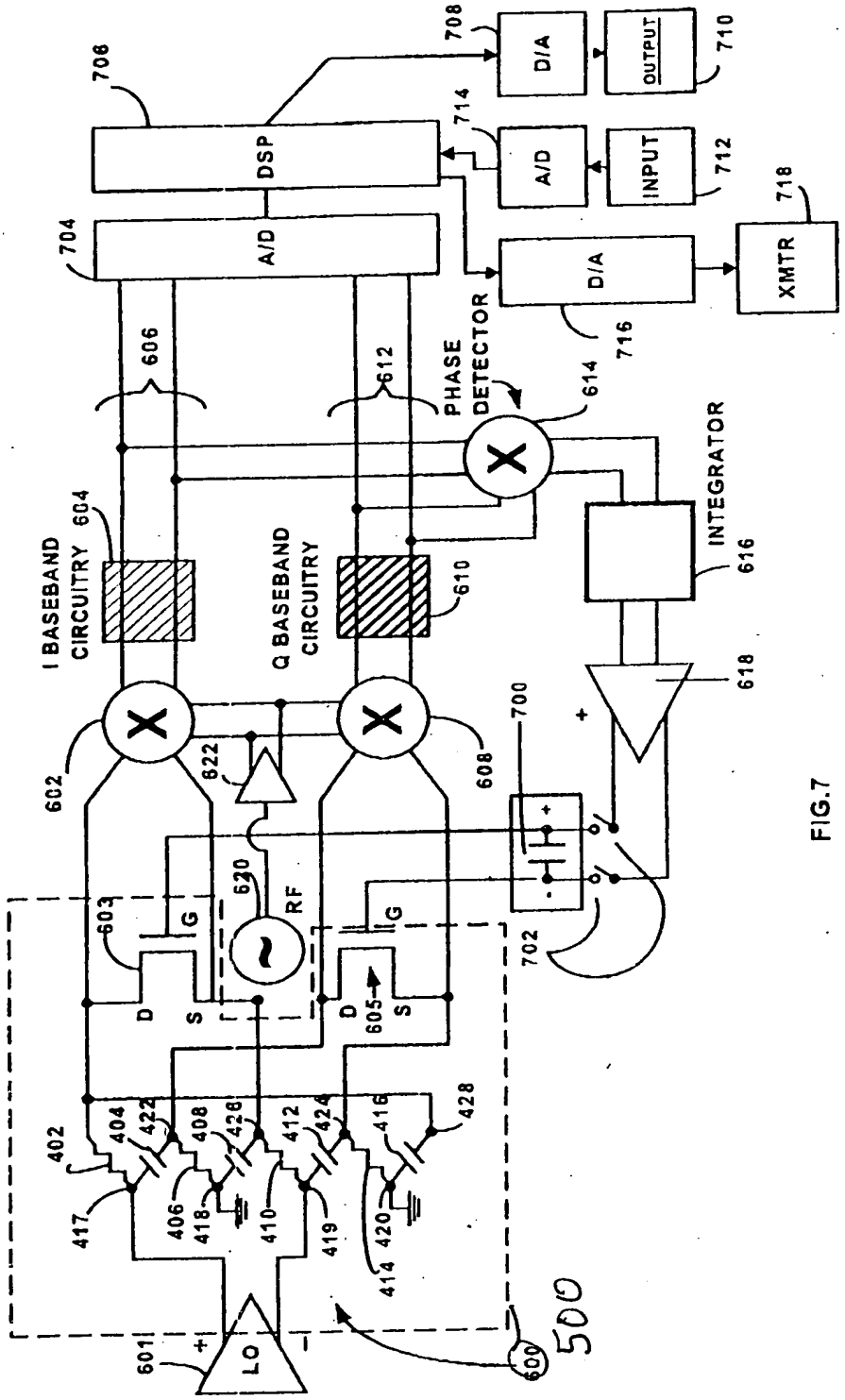

FIG.7

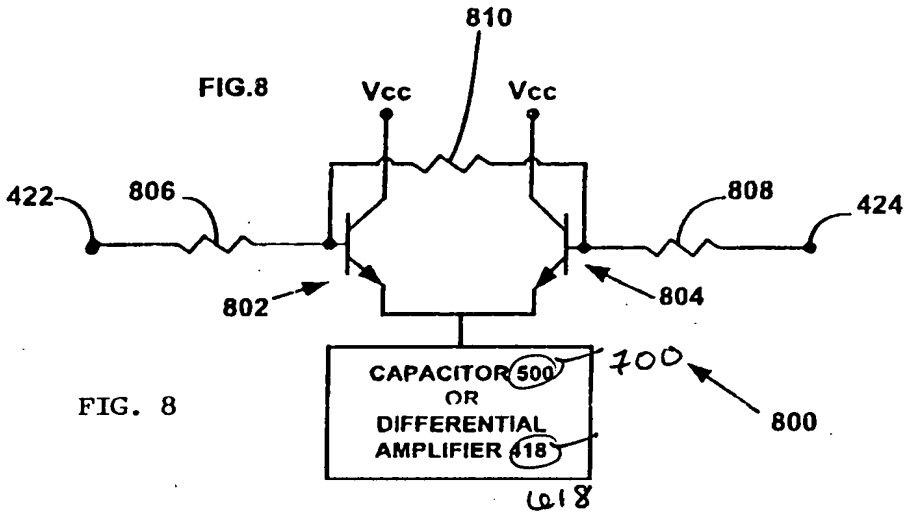

FIG. 8

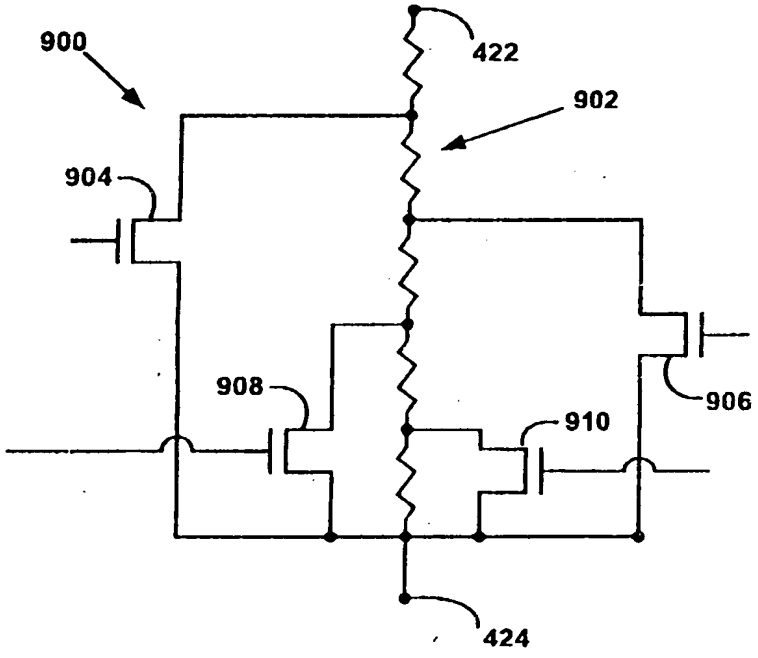

FIG. 9

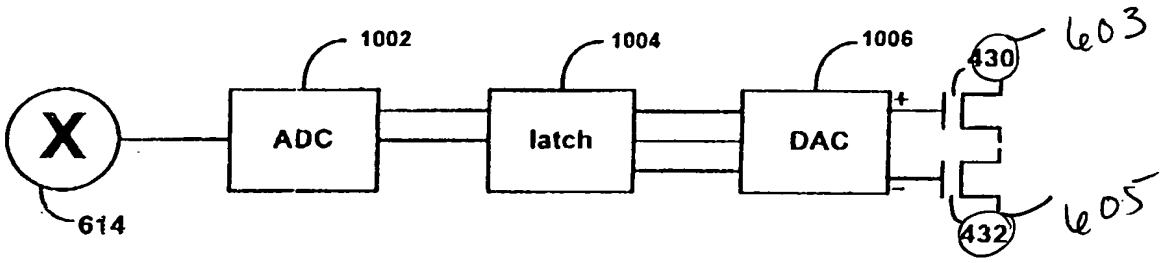

FIG. 10